

WHAT IS CLAIMED IS:

1. A semiconductor device comprising:
a semiconductor layer;
5 a gate insulation film formed on the semiconductor layer and comprising three insulation films each having a different thickness;
a gate electrode formed on the gate insulation film; and
a source region and a drain region each formed adjacent the gate electrode.
- 10 2. A semiconductor device comprising:
a semiconductor layer;
a first gate insulation film formed by selective oxidation;
a second gate insulation film formed by thermal oxidation and comprising two insulation films each having a different thickness; and
15 a gate electrode formed across the first and second gate insulation films.
3. The semiconductor device of claim 2, wherein the first gate insulation film is thicker than any of the insulation films of the second gate insulation film.
- 20 4. A manufacturing method of a semiconductor device comprising:
providing a substrate
forming a first gate insulation film on a semiconductor layer of the substrate by selective oxidation;
forming a second gate insulation film on the semiconductor layer by thermal
25 oxidation, the second gate insulation film comprising two insulation films each having a different thickness; and
forming a gate electrode across the first and the second gate insulation films.
5. The manufacturing method of claim 4, wherein the forming of the second gate
30 insulation film comprises forming a first insulation film of a first thickness, removing the

first insulation film from a predetermined portion of the substrate and forming a second insulation film of a second thickness in a portion adjacent the remaining first insulation film, the second insulation film being thinner than the first insulation film.

5 6. The manufacturing method of a semiconductor device of claim 4, wherein the second gate insulation film is formed after the first gate insulation film is formed.

7. The manufacturing method of a semiconductor device of claim 4, wherein the second gate insulation film is formed before the first gate insulation film is formed.

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8. A manufacturing method of a semiconductor device comprising:
providing a substrate;

forming a LOCOS insulation film at a predetermined region of a semiconductor layer of the substrate by selective oxidation using an oxidation resistant film as a mask;

15 forming a first gate insulation film of a first thickness adjacent the LOCOS insulation film by thermally oxidizing the semiconductor layer after removing the oxidation resistant film;

removing a portion of the first gate insulation film;

forming a second gate insulation film of a second thickness at a portion of the
20 substrate adjacent the remaining first gate insulation film by thermally oxidizing the semiconductor layer, the second gate insulating film being thinner than the first gate insulating film;

a process to form a gate electrode across the gate insulation film of the first thickness, the gate insulation film of the second thickness and the LOCOS gate insulation
25 film; and

forming a source region and a drain region each adjacent the gate electrode.

9. The manufacturing method of a semiconductor device of claim 8, further comprising forming a pad insulation film or a pad insulation film and a pad polysilicon film
30 on the semiconductor layer before forming the LOCOS insulation film.